

Application No. 10/808/119  
Amendment Dated 9/23/2005  
Reply to Office Action of 6/24/2005

Remarks/Arguments

Claims 1-24 are presently pending. Claims 1, 15 and 20 are currently amended.

The Preliminary Amendment, filed on March 23, 2004, previously amended the first sentence of the application to claim the benefit of U.S. provisional application serial number 60/524,143, filed November 21, 2003 under 35 U.S.C. 119(e).

Applicant thanks the Examiner for the recognition that claims 7-9 are patentable.

Claims 15-26 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of copending application number 10/808,237. Accordingly, Applicant has submitted a "Terminal Disclaimer to Obviate a Provisional Double Patenting Rejection Over a Pending "Reference" Application" to address the foregoing rejection. Applicants request a withdrawal of the foregoing rejection.

Claims 1, 12-14 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,974,347 to Nelson. This rejection is respectfully traversed for the following reasons.

Nelson (U.S. Pat. No. 5,974,347) discloses an automated mower in which non-driven steering wheels (46A and 46B) are allegedly steered by steering motor 26 via a linkage. (Col. 5, lines 21-29.) Nelson does not disclose how to prevent mechanical interference between the steering wheels (46A and 46B) and the support frame 62 (See FIG. 1.). The non-pivotable drive wheels (48A and 48B) are driven by a drive motor 162 via a differential 58 coupled to an axle. (Col. 5, lines 32-35.)

In contrast to Nelson, claim 1 now recites "each wheel assembly associated with a corresponding drivable pivotable wheel, a corresponding electrical steering motor for pivoting the drivable pivotable wheel about a steering axis, and a corresponding electrical drive motor for driving the drivable pivotable wheel about a wheel axis distinct from the steering axis, the electrical drive motor integrated into a hub of the drivable pivotable wheel." Nelson neither teaches, nor suggests combining a steering wheel and a drive wheel into a unitary drivable, pivotable wheel with the electrical drive motor integrated into the hub of the drivable pivotable wheel as recited above. Accordingly, Applicants respectfully request the withdrawal of the

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rejection of claim 1. Because claims 12-14 depend upon claim 1, claims 12-14 are patentable for at least similar reasons to claim 1.

Claims 1 and 2 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,007,234 to Shurman et al. in view of U.S. Pat. No. 6,615,108 to Peless et al. This rejection is respectfully traversed for the following reasons.

Shurman discloses a mower that is steered by actuating "certain ones of the second motors and attached wheels in response thereto for guiding the mower carriage along the peripheral edge of the uncut area of the lawn." (Abstract.) In one example of turning the Shurman mower, "wheels 21d and 21c will rotate slightly faster than the other drive wheels moving mower 1 in a slightly arcuate path as shown by arrow I in FIG. 3, or in the alternative potentiometers 50 are adjusted to slow down the speed of drive motors 21a and 21b." (Col. 6, lines 32-38.) In another example of turning the Shurman mower, "certain wheels 21" are "driven while others act as idler wheels," causing "mower 1 to turn in the direction of arrow 1 of FIG. 2 toward the uncut grass." (Col. 6, lines 46-50.) In still another example of turning, "relays 30a and 30b actuate drive motors 20b, 20b', 20c, 20c', 20d and 20d', thus causing mower 1 to steer further into uncut grass area 45 in the direction of arrow I of FIG. 3." (Col. 6, lines 55-58.)

Peless discloses a robotic mower that uses an odometer 24, a compass 26, a navigation system 41, and a sensor system 43 to direct the robotic mower. (Col. 3, lines 33-38.) Peless does not disclose the configuration of the drive wheels or steerable wheels of the autonomous robotic mower.

Even if Peless and Shurman could be combined, the alleged combination does not meet claim 1. Shurman does not disclose "an electrical steering motor for pivoting the drivable pivotable wheel about a steering axis," as recited in claim 1. Rather, Shurman discloses selectively actuating drive motors associated with less than all of the wheels to attempt to steer the vehicle in a certain direction. Peless fails to make up for the previously noted deficiencies of Shurman in the alleged combination. Peless does not disclose any wheel assembly that would add or supplement the disclosure in Shurman. Accordingly, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 102(b) of claim 1 and 2, which depends upon claim 1.

Claims 3-6, 10, and 11 were rejected under 35 U.S.C. 103(a) as being

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unpatentable over U.S. Pat. No. 5,007,234 (Shurman et al.) in view of U.S. Pat. No. 6,615,108 (Peless et al.) and in further view of U.S. Pat. No. 5,667,032 (Kamlukin). This rejection is respectfully traversed for the following reasons.

The above description of Shurman and Peless applies with equal force to the instant rejection. Kamlukin discloses rear drive wheels that are driven via double universal joints. (Abstract.) "In one aspect, the rear wheels are driven and the frame is shaped so as to create large spaces fore and aft of the crossbar into which the rear wheels may turn without interference with the frame at sharp turning angles. In this aspect, the driving transmission may be a variable hydrostatic motor driving a differential which in turn drives a double universal joint of each rear wheel. Each rear wheel is supported by a hinge through which the corresponding universal joint passes." (Col. 1, lines 60-67 and Col. 2, line 1.) FIG. 4 of Kamlukin discloses a steering system and linkage of the vehicle (Col. 2, lines 22-25), which does not use an electrical steering motor.

Even if Shurman, Peless, and Kamlukin could be combined, the alleged combination would not meet claim 3-6, 10, and 11, which all depend on amended claim 1. Claim 1 now recites a "corresponding electrical steering motor for pivoting the drivable pivotable wheel about a steering axis, and a corresponding electrical drive motor for driving the drivable pivotable wheel about a wheel axis distinct from the steering axis, the electrical drive motor integrated into a hub of the drivable pivotable wheel." First, Kamlukin, alone or in combination, does not teach or suggest an electrical drive motor for driving the drivable pivotable wheel about a wheel axis, distinct from a steering axis, as recited in claim 1. Instead, Kamlukin applies rotational energy to the rear wheels via a differential and a double universal joint (Col. 1, lines 60-67.) Second, Kamlukin, alone or in combination, does not disclose that the "electrical motor is integrated into a hub of the drivable pivotable wheel," as recited in claim 1. Rather, the motor drives a differential, which in turn drives a double universal joint of each rear wheel. Third, Kamlukin, alone or in combination, does not disclose an electrical steering motor for pivoting the drivable pivotable wheel about a steering axis, as called for in claim 1. Instead, Kamlukin uses a steering wheel 30 coupled to column 33 to steer the vehicle. (Col. 3, lines 11-13.) Fourth, Peless does not make up for the previously noted deficiencies in the alleged combination because Peless does not disclose wheel assemblies, but rather

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addresses the navigational control aspect of a robotic mower. Accordingly, the alleged combination of Shurman, Peless, and Kamlukin fails to meet claims 3-6, 10 and 11. Additional modifications neither taught, nor suggested would be necessary to meet the claims. For the foregoing reasons, Applicants respectfully request the withdrawal of the rejection of claims 3-6, 10, and 11, which depend upon claim 1.

Claims 15-26 were rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over U.S. Pat. No. 5,667,032 (Kamlukin). This rejection is respectfully traversed for the following reasons.

Claim 15 and 20 are method claims that have been amended to conform to use parallel language to that of amended claim 1. Claims 15 and 20 now call for "an electrical steering motor for pivoting a respective one of the drivable pivotable wheels about a steering axis", "at least one electrical drive motor for driving a respective one of the drivable pivotable wheels about a wheel axis, distinct from the steering axis," and, "the at least one electrical drive motor integrated into a hub of the respective drivable pivotable wheel."

First, Kamlukin does not teach or suggest an electrical drive motor for driving the drivable pivotable wheel about a wheel axis, as recited in claim 1. Instead, Kamlukin uses the steering wheel 30 coupled to column 33. (Col. 3, lines 11-13.) Second, Kamlukin does not disclose that the "electrical motor is integrated into a hub of the drivable pivotable wheel," as recited in claim 1. Rather, in Kamlukin the motor drives differential, which in turn drives a double universal joint of each rear wheel. For the foregoing reasons, Applicants respectfully request the withdrawal of the rejection of claims 15 and 20. Further, because claims 16-19 depend upon claim 15, claims 16-19 are patentable for at least similar reasons to claim 15. Because claims 21-26 depend upon claim 20, claims 21-26 are patentable for at least similar reasons to claim 20.

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In conclusion, it is believed that this application is in condition for allowance, and such allowance is respectfully requested.


The Director or Commissioner of Patents is authorized to charge Deposit Account 04-0525 in the amount of \$130 under 37 C.F.R. 1.20(d) for the filing of the Terminal Disclaimer accompanying this Amendment. Any other fees or charges due as a result of filing of the present paper may be charged against Deposit Account 04-0525.

Respectfully,

  
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